QAPP Worksheet #12 (UFP-QAPP Manual Section 2.6.2) Measurement Performance Criteria Table

Matrix	Solids (Separated Solids)				
Analytical Group[a]	PCBs – Congeners and Homologs				
Concentration Level	Low				
Sampling Procedure[b]	**Analytical Method/SOP**[c]	**Data Quality Indicator (DQIs)**	**Measurement Performance Criteria**[d]	**Quality Control (QC) Sample and/or Activity Used to Assess Measurement Performance**	**QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)**
SW-19	AP-3	Accuracy/Bias-Contamination	No target compounds >1/10 concentration in associated samples	Method Blank (MB)/Instrument Blank	A
	AP-3	Accuracy/Bias-Contamination	No target compounds >1/10 concentration in associated samples	Equipment Rinsate Blanks	S&A
	AP-3	Accuracy/Bias	Native compounds by isotope dilution percent differences (%D) vs. initial calibration (ICAL) ≤ 30%; Native compounds measured against an isotopic isomer vs. ICAL %D = 50%; Labeled standard %D vs. ICAL ≤ 50%; Native Compound relative percent differences (RPDs) ≤ 20% for isotope dilution and ≤ 30% for isotopic isomer; Standard RPDs ≤ 50%	Batch Control Spike	A

QAPP Worksheet #12 (UFP-QAPP Manual Section 2.6.2) Measurement Performance Criteria Table

Sampling Procedure[b]	Analytical Method/SOP[c]	DQIs	Measurement Performance Criteria[d]	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
SW-19 (con't)	AP-3	Accuracy/Bias	Per EPA Method 1668B Table 6	Pre-extraction Internal Standards	A
	AP-3	Accuracy/Bias	Supplier Certified Limits	Performance Evaluation (PE) Sample	A
	AP-3	Precision[e]	RPD ≤ 50% if both samples are > 5x Estimated Minimum Level (EML)	Field Duplicate	S&A
	AP-3	Completeness	≥ 90%	Data Completeness Check	S&A

[a] Refer to QAPP Worksheet #15 for a complete list of analytes for each analytical group
[b] Refer to QAPP Worksheet #21
[c] Refer to QAPP Worksheet #23
[d] Analyte specific limits may be found in the Laboratory SOP located in Appendix B
[e] Field duplicates (as co-located samples) will be the only precision DQI for the HV solids samples. Laboratory duplicates are not possible, as the entire sample is required for the extraction, and cannot be split.

Matrix	Solids (Sorption Media [PUF])				
Analytical Group[a]	PCBs – Congeners and Homologs				
Concentration Level	Low				
Sampling Procedure[b]	**Analytical Method/SOP[c]**	**DQIs**	**Measurement Performance Criteria[d]**	**QC Sample and/or Activity Used to Assess Measurement Performance**	**QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)**
SW-19	AP-3	Accuracy/Bias-Contamination	No target compounds >1/10 concentration in associated samples	MB/Instrument Blank	A

QAPP Worksheet #12 (UFP-QAPP Manual Section 2.6.2) Measurement Performance Criteria Table

	AP-3	Accuracy/Bias-Contamination	No target compounds >1/10 concentration in associated samples	Equipment Rinsate Blanks	S&A
	AP-3	Accuracy/Bias	Native compounds by isotope dilution %Ds) vs. ICAL ≤ 30%; Native compounds measured against an isotopic isomer vs. ICAL %D = 50%; Labeled standard %D vs. ICAL ≤ 50%; Native Compound RPDs ≤ 20% for isotope dilution and ≤ 30% for isotopic isomer; Standard RPDs ≤ 50%	Batch Control Spike	A

QAPP Worksheet #12 (UFP-QAPP Manual Section 2.6.2) Measurement Performance Criteria Table

Sampling Procedure[b]	Analytical Method/SOP[c]	DQIs	Measurement Performance Criteria[d]	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
SW-19 (con't)	AP-3	Accuracy/Bias	Per EPA Method 1668B Table 6	Pre-extraction Internal Standards	A
	AP-3	Accuracy/Bias	50-150%	Static Spike	S&A
	AP-3	Accuracy/Bias	25-150%	Dynamic Spike	S&A
	AP-3	Precision[e]	RPD ≤ 50% if both samples are > 5x EML	Field Duplicate	S&A
	AP-3	Completeness	≥ 90%	Data Completeness Check	S&A

[a] Refer to QAPP Worksheet #15 for a complete list of analytes for each analytical group
[b] Refer to QAPP Worksheet #21
[c] Refer to QAPP Worksheet #23
[d] Analyte specific limits may be found in the Laboratory SOP and High Volume Sampling SOP addendum located in Appendix B
[e] Field duplicates (as co-located samples) will be the only precision DQI for the HV solids samples. Laboratory duplicates are not possible, as the entire sample is required for the extraction, and cannot be split.

Matrix	Solids (Separated Solids)				
Analytical Group[a]	PCDDs/Fs				
Concentration Level	Low				
Sampling Procedure[b]	**Analytical Method/SOP[c]**	**DQIs**	**Measurement Performance Criteria[d]**	**QC Sample and/or Activity Used to Assess Measurement Performance**	**QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)**

QAPP Worksheet #12 (UFP-QAPP Manual Section 2.6.2) Measurement Performance Criteria Table

SW-19	AP-1	Accuracy/Bias-Contamination	a) No Target Compound >25% of adjusted quantitation limit (QL) b) If detected, the concentration should be less than the QL or <10 times the highest concentration found in the sample batch; c) Signal to noise (S/N) should be >10:1 for isotopically labeled standard added before extraction; d) Estimated Detection Limit (EDL) ≤ 50% of the adjusted QL e) Recoveries of the isotopically labeled standard should be 40% minimum or meet the requirements of c and d above	MB	A
	AP-1	Accuracy/Bias-Contamination	No target compound >QL	Equipment Rinsate Blanks	S&A

Sampling Procedure[b]	**Analytical Method/SOP[c]**	**DQIs**	**Measurement Performance Criteria[d]**	**QC Sample and/or Activity Used to Assess Measurement Performance**	**QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)**

QAPP Worksheet #12 (UFP-QAPP Manual Section 2.6.2) Measurement Performance Criteria Table

SW-19 (con't)	AP-1	Sensitivity	EDL<Project Action Limit (PAL), with the exception of 2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	Labeled Compounds	A
	AP-1	Accuracy/Bias	Native compound %D (vs. ICAL) ≤ 20%; Labeled Standard %D (vs. ICAL) ≤ 30%; Native Compound RPDs ≤ 10%; Labeled Standard RPDs ≤ 20%	Batch Control Spike	A
	AP-1	Accuracy/Bias	Supplier Certified Limits	PE Sample	A
	AP-1	Accuracy/Bias	Within statistical control limits	QC Standard	A
	AP-1	Precision[e]	RPD ≤ 50% if both samples are > 5x QL	Field Duplicate	S&A
	AP-1	Completeness	≥ 90%	Data Completeness Check	S&A

[a] Refer to QAPP Worksheet #15 for a complete list of analytes for each analytical group
[b] Refer to QAPP Worksheet #21
[c] Refer to QAPP Worksheet #23
[d] Analyte specific limits may be found in the Laboratory SOP located in Appendix B
[e] Field duplicates (as co-located samples) will be the only precision DQI for the HV solids samples. Laboratory duplicates are not possible, as the entire sample is required for the extraction, and cannot be split.

QAPP Worksheet #12 (UFP-QAPP Manual Section 2.6.2) Measurement Performance Criteria Table

Matrix	Solids (Sorption Media [PUF])				
Analytical Group[a]	PCDDs/Fs				
Concentration Level	Low				
Sampling Procedure[b]	**Analytical Method/SOP**[c]	**DQIs**	**Measurement Performance Criteria**[d]	**QC Sample and/or Activity Used to Assess Measurement Performance**	**QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)**
SW-19	AP-1	Accuracy/Bias-Contamination	a) No Target Compound >25% of adjusted QL b) If detected, the concentration should be less than the QL or <10 times the highest concentration found in the sample batch; c) S/N should be >10:1 for isotopically labeled standard added before extraction; d) EDL ≤ 50% of the adjusted QL e) Recoveries of the isotopically labeled standard should be 40% minimum or meet the requirements of c and d above	MB	A
	AP-1	Accuracy/Bias-Contamination	No target compound >QL	Equipment Rinsate Blanks	S&A

QAPP Worksheet #12 (UFP-QAPP Manual Section 2.6.2) Measurement Performance Criteria Table

Sampling Procedure[b]	Analytical Method/SOP[c]	DQIs	Measurement Performance Criteriad	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
SW-19 (con't)	AP-1	Sensitivity	EDL<PAL, with the exception of 2,3,7,8-TCDD	Labeled Compounds	A
	AP-1	Accuracy/Bias	Native compound %D (vs. ICAL) ≤ 20%; Labeled Standard %D (vs. ICAL) ≤ 30%; Native Compound RPDs ≤ 10%; Labeled Standard RPDs ≤ 20%	Batch Control Spike	A
	AP-1	Accuracy/Bias	70-130%	Static Spike	S&A
	AP-1	Accuracy/Bias	40-130%	Dynamic Spike	S&A
	AP-1	Accuracy/Bias	Within statistical control limits	QC Standard	A
	AP-1	Precision[e]	RPD ≤ 50% if both samples are > 5x QL	Field Duplicate	S&A
	AP-1	Completeness	≥ 90%	Data Completeness Check	S&A

[a] Refer to QAPP Worksheet #15 for a complete list of analytes for each analytical group
[b] Refer to QAPP Worksheet #21
[c] Refer to QAPP Worksheet #23
[d] Analyte specific limits may be found in the Laboratory SOP and High Volume Sampling SOP addendum located in Appendix B
[e] Field duplicates (as co-located samples) will be the only precision DQI for the HV solids samples. Laboratory duplicates are not possible, as the entire sample is required for the extraction, and cannot be split.

Matrix	Water	
Analytical Group[a]	General Chemistry – POC	
Concentration Level	Low	

QAPP Worksheet #12 (UFP-QAPP Manual Section 2.6.2) Measurement Performance Criteria Table

Sampling Procedure[b]	Analytical Method/SOP[c]	DQIs	Measurement Performance Criteria[d]	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
LPR-FI-04	C-16	Accuracy/Bias-Contamination	<0.025 milligram/Liter (mg/L) or <10% of the concentration in the associated samples	MB	A
	C-16	Accuracy/Bias-Contamination	No Target Compound >QL	Equipment Rinsate Blank	S&A
	C-16	Accuracy/Bias	95-105 percent recovery (%R) or within the manufacturer's control limits if > 95-105%R	Laboratory Control Sample (LCS)	A
	C-16	Accuracy/Bias	85-115%R	Laboratory Fortified Blank (LFB)	A
	C-16	Precision	RPD ≤20% if both samples are >10x QL	Laboratory Duplicate	A
	C-16	Precision	RPD ≤30% if both samples are >5x QL or absolute difference between concentrations <2x QL if sample and/or field duplicate are ≤5x QL	Field Duplicate[e]	S&A
	C-16	Completeness	≥90%	Data Completeness Check	S&A

[a] Refer to QAPP Worksheet #15 for a complete list of analytes for each analytical group
[b] Refer to QAPP Worksheet #21
[c] Refer to QAPP Worksheet #23
[d] Analyte specific limits may be found in the Laboratory SOP located in Appendix B
[e] The field duplicate will consist of a second subsample collected from the 20L carboy.

QAPP Worksheet #12 (UFP-QAPP Manual Section 2.6.2) Measurement Performance Criteria Table

Matrix	Water				
Analytical Group[a]	General Chemistry – DOC				
Concentration Level	Low				
Sampling Procedure[b]	**Analytical Method/SOP**[c]	**DQIs**	**Measurement Performance Criteria**[d]	**QC Sample and/or Activity Used to Assess Measurement Performance**	**QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)**
LPR-FI-04	C-13, C-16	Accuracy/Bias-Contamination	No target compound >QL	MB	A
	C-13, C-16	Accuracy/Bias-Contamination	No target compound >QL	Equipment Rinsate Blank	S&A
	C-13, C-16	Accuracy/Bias	90-109%R	LCS	A
	C-13, C-16	Precision	RPD≤ 20%	LCS Duplicate (LCSD)	A
	C-13, C-16	Accuracy/Bias	≤110% of the unspiked sample	Inorganic Carbon Spike	A
	C-13, C-16	Accuracy/Bias	80-120%R	Matrix Spike (MS)	A
	C-13, C-16	Precision	RPD≤ 20%	Matrix Spike Duplicate (MSD)	A
	C-13, C-16	Precision	RPD ≤30% if both samples are >5x QL or absolute difference between concentrations <2x QL if sample and/or field duplicate are ≤5x QL	Field Duplicate[e]	S&A
	C-13, C-16	Completeness	≥90%	Data Completeness Check	S&A

[a] Refer to QAPP Worksheet #15 for a complete list of analytes for each analytical group
[b] Refer to QAPP Worksheet #21
[c] Refer to QAPP Worksheet #23
[d] Analyte specific limits may be found in the Laboratory SOP located in Appendix B
[e] The field duplicate will consist of a second subsample collected from the 20L carboy.

QAPP Worksheet #12 (UFP-QAPP Manual Section 2.6.2) Measurement Performance Criteria Table

Matrix	Water				
Analytical Group[a]	General Chemistry – SSC				
Concentration Level	Low				
Sampling Procedure[b]	**Analytical Method/SOP**[c]	**DQIs**	**Measurement Performance Criteria**[d]	**QC Sample and/or Activity Used to Assess Measurement Performance**	**QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)**
LPR-FI-04	C-17	Accuracy/Bias-Contamination	No target compound >QL	MB	A
	C-17	Accuracy/Bias-Contamination	No target compound >QL	Equipment Rinsate Blank	S & A
	C-17	Precision	RPD ≤20%	Laboratory Duplicate	A
	C-17	Precision	RPD ≤30% if both samples are >5x QL or absolute difference between concentrations <2x QL if sample and/or field duplicate are ≤5x QL	Field Duplicate[e]	S & A
	C-17	Completeness	≥90%	Data Completeness Check	S & A

[a] Refer to QAPP Worksheet #15 for a complete list of analytes for each analytical group
[b] Refer to QAPP Worksheet #21
[c] Refer to QAPP Worksheet #23
[d] Analyte specific limits may be found in the Laboratory SOP located in Appendix B
[e] The field duplicate will consist of a second subsample collected from the 20L carboy.